

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

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In re application of: : Box:

Applicant: Eric BENAZZI et al. : Group Art Unit: 1755

Serial No.: 09/103,528 *300* : Examine: D. Sample

Filed: June 24, 1998 :

For: EU-1 ZEOLITE CATALYST AND A PROCESS FOR IMPROVING THE
POUR POINT FEEDS CONTAINING PARAFFINS

BRIEF ON APPEAL

Honorable Commissioner of
Patents and Trademarks
Washington, D.C. 20231

Sir:

Further to the Notice of Appeal filed December 27, 1999, herewith are three copies of Appellants' Brief on Appeal. Appellants hereby request a one-month extension of time in order to file this Brief. The attached check includes the statutory fee of \$110.00 for a one-month extension of time, as well as the \$300.00 fee for the filing of this Brief.

This is an appeal from the decision of the Examiner finally rejecting claims 1-30 of the above-identified application.

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(1) REAL PARTY IN INTEREST

The above-identified application is assigned to Institut Français du Pétrole by means of an Assignment recorded at Reel 9309, Frame 0392.

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(2) RELATED APPEALS AND INTERFERENCES

There are no known related appeals or interferences.

(3) STATUS OF THE CLAIMS

Claims 1-30 are pending in the present application. Claims 18-30 are withdrawn, and claims 1-17 are on appeal.

(4) STATUS OF AMENDMENTS AFTER FINAL

No amendment were presented subsequent to Final Rejection. The Declarations submitted subsequent to Final Rejection have been considered.

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(5) SUMMARY OF THE INVENTION

The present invention is directed to a modified EU-1 zeolite comprising silicon and an element T which is Al, Fe, Ga, or B, produced by a process in which at least a portion of elements T are removed from a starting zeolite, whereby the modified zeolite has a global atomic ratio Si/T higher than that of the starting zeolite, by at least 10% of the Si/T ratio of the starting zeolite. See the specification at page 9, lines 9-19.

(6) ISSUES

The only issue for consideration on this appeal is the rejection of all claims under 35 U.S.C. §103.

(7) GROUPING OF THE CLAIMS

Separate consideration is respectfully requested for each of claims 3, 4, 5 and 6, separate arguments in support of the patentability of each of these claims being advanced

below.



(8) APPELLANTS' ARGUMENTS

Claims 1-17 remain rejected under 35 U.S.C. §103 over Casci et al. '754 taken with Kuehl '243. Casci discloses zeolite EU-1 with varying silicon-to-aluminum ratios. (It is noted that Table 4 of the patent discloses silica to alumina ratio, which must be adjusted to make a comparison on an atomic basis. The atomic ratios are therefore about one-half of the silica-to-alumina ratios in Table 4 of the reference.

Casci fails to disclose the removal of alumina (or "T") atoms from the framework, instead disclosing ratios attributable to as-synthesized zeolites. There is, surprisingly, a difference between a zeolite having a silica/T ratio resulting from direct synthesis versus one having such a ratio resulting from the removal of T atoms. This is submitted to have been clearly demonstrated in the Declarations of record. In particular, the Board's attention is directed to the later of the two Declarations, which corrects a typographical error in the earlier Declaration. This Declaration compares a catalyst C4 of Example 4 herein, having a ratio of Si/Al of 59.7, obtained by dealumination of a starting material having a global atomic ratio of 17.5. This material is compared against the zeolite prepared in Casci's Example 5, having a Si/Al ratio of about 60, as synthesized. These catalysts are compared in a catalytic dewaxing process, and it is shown that a substantially improved pour point and oil yield (each about 4%) is achieved for the catalyst of the invention versus that of the prior art, having the same silicon to aluminum ratio, but differing by method of preparation.

It is thus submitted that the combination of Casci '754 and Kuehl '243 also does not suggest the presently claimed materials. It is argued in the Final Rejection that Kuehl discloses applicable dealumination to any zeolite having a constraint index of 1-12. It is submitted, however, that this reasoning is an oversimplification. Kuehl discloses, for example at column 1, line 60 - column 2, line 57, that it may be advantageous, for various zeolites, to increase the ratio of silica to alumina, i.e., by removing alumina from the framework. The advantage is attributed not to the removal, *per se*, but to the resultant high silica to alumina ratio. Therefore, this teaching, taken with Casci, would suggest to one of ordinary skill in the art that there is no difference between a zeolite produced by

dealumination and one synthesized having a similar to alumina ratio. Indeed, this is the supposition advanced in prior Office Actions.

Instead, however, the attached Declaration clearly shows that there is an advantage to the use of dealumination processes, over the as-synthesized zeolites disclosed in the primary reference. Accordingly, it is submitted that this clearly rebuts any case of *prima facie* obviousness. However, the Advisory Action mailed December 6, 1999, argues that the results shown in the Declaration are not commensurate in scope with the claims.

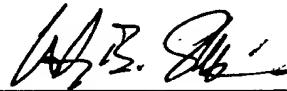
Appellants respectfully disagree with this analysis. It is argued at page 2 of the Advisory Action that the present claim 1 is not limited as to Si/T ratio, and that Appellants' have not shown that similar results occur for all ratios encompassed. On the one hand, the Office Action itself set up the expectation of one of ordinary skill in the art that regardless of Si/T ratio, two zeolites having the same ratio, one prepared by dealumination techniques and one prepared by synthesis at that ratio, would be the same. This the Declaration has disproved. Thus, the assumption underlying the rationale in the Office Action has been disproved, and the assumption, in fact, shifts to that put forth by appellants herein; specifically, that zeolites prepared by dealumination techniques are different and in fact unexpectedly improved over those prepared by synthesis techniques. One of ordinary skill in the art would then expect that this effect would be achieved for all such dealuminated zeolites, regardless of ratio.

Moreover, with respect to claims 3, 4 and 5, reciting ratios tested in the Declaration (claim 3) or higher (claims 4 and 5), this analysis is even more appropriate. It is submitted that these claims are patentable regardless of the analysis in the Office Action.

The Advisory Action additionally argues that the evidence of record is not commensurate in scope with the claim, which encompasses metals other than aluminum as the T atom. However, it is respectfully submitted that the use of different metals than aluminum and zeolites is conventional in the art, and it would be expected that results achieved for aluminum would be experienced for other metals in this situation. Moreover, it is submitted that claim 6, which recites metal T as aluminum, is also separately patentable on this basis.

In conclusion, it is submitted that ample basis to overturn the rejections of record exists, and the same is respectfully requested.

Respectfully submitted,



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Claims on Appeal
Serial No. 09/103,528

1. A modified EU-1 zeolite comprising silicon and an element T which is Al, Fe, Ga, or B, produced by a process in which at least a portion of elements T are removed from a starting zeolite, whereby the modified zeolite has a global atomic ratio Si/T higher than that of the starting zeolite, by at least 10% of the Si/T ratio of the starting zeolite.
2. A zeolite according to claim 1, in which Si/T of the modified zeolite is at least 20.
3. A zeolite according to claim 1, in which Si/T of the modified zeolite is over 60.
4. A zeolite according to claim 1, in which Si/T of the modified zeolite is at most 600.
5. A zeolite according to claim 1, in which Si/T of the modified zeolite is at most 300.
6. A zeolite according to claim 1, in which T is aluminium (Al).
7. A process for preparing a zeolite according to claim 1, by treating a EU-1 zeolite obtained by synthesis using at least one solution of an acid.
8. A process for preparing a zeolite according to claim 1, using at least one heat treatment of a EU-1 zeolite obtained by synthesis followed by at least one treatment with a solution of an acid.
9. A process for preparing a zeolite according to claim 1, in which the EU-1 zeolite obtained by synthesis is dealuminated by at least one heat treatment followed by at

least one treatment using a chemical dealuminating compound which is ammonium hexafluorosilicate, silicon tetrachloride, or ethylenediaminetetra-acetic acid, optionally in its sodium or disodium form.

10. A process for preparing a zeolite according to claim 1, in which the EU-1 zeolite obtained by synthesis is dealuminated by at least one treatment with a chemical dealuminating compound which is ammonium hexafluorosilicate, silicon tetrachloride, or ethylenediaminetetra-acetic acid, optionally in its sodium and disodium form.

11. A catalyst comprising EU-1 zeolite according to claim 1.

12. A catalyst according to claim 11, comprising at least one matrix and 0.5% to 99.5% by weight of EU-1 zeolite with respect to the matrix + zeolite mixture.\

13. A catalyst according to claim 11, further comprising at least one hydro-dehydrogenating element.

14. A catalyst according to claim 13, in which the hydro-dehydrogenating element is a noble group VIII element.

15. A catalyst according to claim 13, in which the hydro-dehydrogenating element is a combination of at least one group VI metal or compound and at least one non noble group VIII metal or compound.

16. A catalyst according to claim 15, containing phosphorous.

17. A catalyst according to claim 13, in which the hydro-dehydrogenating element is niobium and/or rhenium.